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RAPID ONSET OF PROTECTION AGAINST MYCOPLASMA HYOPNEUMONIAE

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Introduction and Objectives

Respiratory disease due to infection with Mycoplasma hyopneumoniae is a significant economic problem for swine producers worldwide. Vaccination against Mycoplasmal pneumonia is one of the most common animal health interventions in modern pig production[1]. To allow flexibility in administration, such as in early infections or vaccination at normal animal movement, a rapid onset of immunity is a benefit to producers. When combined with excellent protection to market weights, a rapid onset vaccine offers producers the best combination of features for a *Mycoplasma* vaccine. This paper describes a study to demonstrate a 14 day onset of protection from Ingelvac® M.hyo in three week old pigs.

Materials and Methods

A challenge study was performed following GLP guidelines. Protection was induced by a single dose of Mycoplasma Hyopneumoniae Bacterin (Ingelvac® M. hyo) when administered in 3 week old pigs. Efficacy was determined by exposure of pigs to a virulent heterologous challenge homogenate of M. hyopneumoniae strain 232 by intratracheal injection at 2, 3, or 4 weeks post-vaccination.

One hundred and thirty-two normal, healthy pigs at 3 weeks of age were randomly assigned to treatment groups and blocked by weight. Pigs in the Ingelvac M. hyo groups (1, 3, & 5) received a 1 x 2 ml dose of the bacterin at 3 weeks of age. Pigs in groups 2, 4, & 6 received a 1 x 2 ml dose of saline at 3 weeks of age. Pigs in group 7 were strict controls and received no treatment or challenge. Four of the group 7 pigs (designated as alternates) were necropsied at each time period to confirm animals were negative for respiratory lesions associated with *M. hyopneumoniae*. Pigs were challenged intratracheally with doses ranging from 1.0×10^5 CCU/ml to 1.0×10^6 CCU/ml of virulent *M. hyo* strain 232, and maintained for 28 days prior to necropsy. The study evaluated gross lung pathology as its primary measure of efficacy. All observations, scorings and independent statistical analyses were blinded to the observer.

Results and Discussion

This study demonstrated that Ingelvac® M. hyo induced significant levels of protection by 2 weeks post-vaccination (Table 1). There were no significant differences between vaccinated pigs and non-challenged strict controls at 3 weeks post-vaccination. The onset of protection is initiated at 2 weeks post-vaccination.

The aqueous phase of vaccine released on injection may be responsible for stimulation of rapid immunity. Subsequent release of depot antigen may be responsible for stimulation of immunity to market ages. This long lasting protection has been demonstrated to significantly exceed conventional two dose vaccines in most trials, nominally exceeding two dose vaccines in the remaining cases[2].

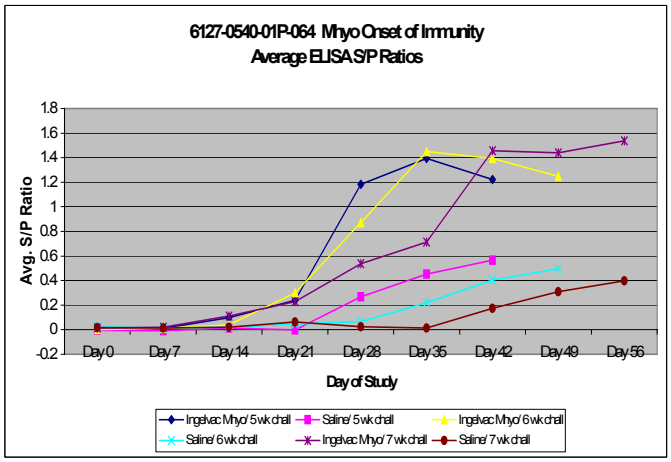
Table 1 - Average Percent Lung Involvement

Tx Group	2 wks	3 wks	4 wks
Challenge Controls	9.20[a]	9.89[a]	4.38[a]
Vaccinates	3.93[b]	0.79[b]	0.88[b]
Strict Controls	0.10[c]	0.20[b]	0.20[b]

[abc]Like letters are not significantly (P<0.05) different

Serum samples were tested using the IDEXX Mycoplasma ELISA[3]. An anamnestic serologic response was noted in vaccinated pigs following challenge (Graph 1), another indication of active immunization.

A single dose of Mycoplasma Hyopneumoniae Bacterin (Ingelvac® M. hyo) induces a significant level of protection at 2 weeks post vaccination.



References

1. NAHMS Swine 2000.
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